Great Pond Subwatershed
Falmouth, Cape Cod, Massachusetts

The Great Pond Subwatershed is located in East Falmouth and Sandwich. It has an area of 5,576 acres. The Coonamessett River flows into Great Pond, which in turn opens to Vineyard Sound at its southern boundary. Great Pond has a northwest prong called Perch Pond and a northeast prong called Dexter River. The portion of the watershed south of Route 28 is intensely developed with residences surrounding all of Great Pond. The watershed extends to the north into the Massachusetts Military Reservation. At buildout, the subwatershed is projected to have about 4,500 homes with a yearly average population of 8,400 people.

An environmental concern in this watershed is nitrogen loading into the pond, caused primarily by septic systems. Results from Falmouth Pond Watchers water quality sampling demonstrate poor water quality in its upper region, as evidenced by high nitrogen levels and periodically low dissolved oxygen levels in the bottom water. A low oxygen event resulting in a fish kill in the upper portion of the pond was documented in 1997. Conclusions were that the nitrogen-loading causes most areas of the pond to be significantly impaired to severely degraded, that home septic systems and fertilizer use causes two thirds of the nitrogen-load, and that eliminating the great majority of that nitrogen-load will restore reasonably acceptable quality to the pond. The options explored for remedy were administrative measures, such as bylaws and regulations, and engineered measures, such as new septic systems, sewers with central treatment plants, and constructed wetlands.

The Massachusetts Military Reservation has had detrimental environmental effects on this watershed. Past oil, fuel, chemical, and hazardous waste disposal activities on the base have created ground water pollution plumes, one of which is located within this watershed. The Air Force Center for Environmental Excellence (AFCEE) is investigating and addressing this groundwater pollution.

The Ashumet Nitrogen Plume, which emanates from a now-closed wastewater treatment plant on the base, is heading towards Bournes Pond, but has not yet reached it. The nitrogen in the plume will increase nitrogen loading in the ponds by about 2%. In 1998, the US Air Force gave Falmouth $8.5 million to fund measures to offset nitrogen loading in Great, Green, and Bournes Ponds. The Ashumet Plume Citizens Committee was appointed by the town to make recommendations for such offset measures.

Of the Three Ponds (Great, Green, and Bournes), Great Pond's watershed contains most of the fresh water ponds that reduce the concentration of nitrogen flowing through them.

Approximately five percent of Falmouth is publicly sewered. The sewered areas are Main Street in Falmouth and nearly all of Woods Hole. Ninety to ninety-five percent of the town is on municipal water. There is one treatment plant in Falmouth, currently processing 550,000 gallons per day (gpd) with a capacity of 810,000 gpd, discharging to groundwater. A $14 million upgrade has been approved to bring the capacity up to one million gpd in the next few years.

Stewards:

- Ashumet Plume Citizens Committee
- Falmouth Pond Watchers
- Falmouth Associations Concerned with Estuaries and Saltponds (FACES)
- Perch Pond Association
- Save Perch Pond Committee

Studies conducted in the watershed:

- DMF completed a Sanitary Survey along the Great Pond shoreline in November 1993. The survey identified 28 locations where there is evidence of stormwater discharge or road runoff into the pond. The pond shows signs of being impacted by runoff.
- Water Quality Monitoring of Falmouth's Coastal Ponds: Results from the 1997 Season. Falmouth Pond Watchers. June 1998. Similar documents are also available for the 1994-95 and 1996 sampling seasons.
- Capella Consulting was hired by the Town of Falmouth in December 1999 to conduct a $17,000 coastal erosion study of the western shore of Great Pond and Perch Pond. The study included 100 sediment samples along western Great Pond and 20 sediment samples of Perch Pond.
- Ashumet Plume Nitrogen Offset Program. Report of the Ashumet Plume Citizens Committee: Water Quality Assessment, Conclusions, and Program Options. October 27, 2000. (View history, progress reports, and recommendations of the program at www.geocities.com/ashumet2001).
- Study of nitrogen entering Green Pond, conducted through the Boston University Marine Program in 2001.
- Study conducted by Boston University Marine Program in 2001 of the sources of nitrogen entering Great Pond.
- Cape Cod Atlas of Tidally Restricted Salt Marshes. 2001. Cape Cod Commission.
- Great/Perch Pond was selected as a priority area for the Estuaries Project – Southeastern Massachusetts Embayment Restoration, funded by the state and UMass Dartmouth. The goal of the project is to develop critical nutrient loading thresholds for each embayment to aid in water resources planning and which will support federal requirements for the development of Total Maximum Daily Loads for impaired surface waters. This area will be evaluated in 2002.

Who is collecting water quality data and where:

- Falmouth Pond Watchers: Great Pond
  (view data at www.state.ma.us/czm/falmouth_pond_watchers.htm)
- The United States Geological Survey maintains a stream flow gauge in Great/Perch Pond, collecting data that will be used in the Massachusetts Estuaries Project.

Management actions taken:

- Massachusetts Division of Fisheries and Wildlife (DFW) stocks Mares Pond with rainbow, brook, and brown trout. Coonamessett River below Route 28 is annually stocked with sea run brown trout.
- In November 2000 a permit was issued for Perch Pond that allows 10 years of maintenance dredging up to three feet in depth and up to 9,500 cubic yards of material. The dredging proposed in 2002 was estimated to cost $14,000. Some town officials believe the dredging as permitted will not make a significant improvement to the water quality in the pond, since there in not enough water flow to keep the channel from quickly being filled back in with silt.
- DFW manages Crane Wildlife Management Area for upland game species as well as grassland bird species such as the meadowlark and grasshopper sparrow. Management includes mowing, tree shearing, and prescribed burns. More information available at http://www.state.ma.us/dfwele/dfw/bdi/Crane7e1.htm
- The Air Force Center for Environmental Excellence (AFCEE) treated the leading edge of the FS-28 groundwater plume. As a result, most of the Coonamessett cranberry bogs returned to production in 2000.

- In 2000 a new aluminum fish ladder was installed in Pond 14 in the Coonamessett River by the Air Force in an effort to enhance fish resources in the area affected by the FS28 plume.
- Herring run restoration from the Coonamessett River into the Coonamessett Pond. A fishway ladder will be constructed and there will be cleanout downstream with removal of dredge material. Funded through the Wildlife Habitat Incentives Program of the Natural Resource Conservation Service. 2001.
- Falmouth Conservation Commission received a Year 2002 Self Help Grant of $250,000 to purchase the Fender & Wald property on Thomas Landers Road. The property is characterized as: 54 acres, Zone II, vernal pool, sandplain grassland rare habitat, public road greenbelt, could hold 30-40 houses if not purchased for open space.
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Subwatershed facts: (For data sources see Appendix)

- 21 E sites: 9 total. 6 sites on the Masschusetts Military Reservation. The other sites are Souza's Texaco, E. Falmouth Highway; Jeep/Eagle Dealer, Route 28 Falmouth; and Capeway Auto Recycling, Gifford St., Falmouth.
- Solid waste sites: none
- Zone IIs located in this watershed: 2
- Interim Wellhead Protection Areas (IWPAs): 1
- Percent of the undeveloped land that is protected (according to 1985/1990 data): 32%
- Acres of existing wetlands: 31
- Certified vernal pools: 1
- Named freshwater ponds: Mares, Spectacle, Deep, Jenkins, Parker Road, Round, Shallow, Randal, Pickerel, Coonamessett, Round *(2nd)*
- Named rivers or creeks: Dexter, Coonamessett
- Shellfish growing areas: The upper reaches of Great Pond are conditionally approved for shellfish harvesting. The lower reaches are approved.
- This watershed contains Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife.

Priorities:

- Develop critical nutrient loading thresholds for Great/Perch Pond to aid in water resources planning and the development of TMDLs.
- The Town of Falmouth should refer to the DMF Sanitary Survey (1993) to prioritize the 28 sites identified for stormwater remediation.
- The Falmouth Pond Watchers report of their 1997 water sampling season recommended that a more detailed ecological/land-use assessment of this pond should be undertaken over the next several years.
- Implement BMP on stormdrain on Route 28 draining into Great Pond. Work with Massachusetts Highway Department to correct. (NRCS).
- The Town of Falmouth put a priority on installing a sewer system on the Maravista Peninsula. A sewer system is being evaluated that would include a decentralized package treatment plant in the area. The cost of a system is estimated to be between $20 and $25 million.
- The Town of Falmouth needs to implement long term solutions to nutrient overloading in this coastal pond to offset threats to water quality, recreational uses of the pond, habitat, and aesthetics.
- Implement controls to prevent poaching and vandalism in the Coonamessett Herring Run.

- Crooked Pond needs volunteers to participate in the Pond and Lakes Stewardship Project (PALS), measuring water quality and other characteristics of the ponds.
- Implement those salt marsh restoration projects identified in the 2001 *Cape Cod Atlas of Tidally Restricted Salt Marshes* that have been evaluated and prioritized by the town. Sites are: Menauhant Road restriction of channel into Great Pond (Site FA-3), Pine Grove Avenue restriction of channel off Great Pond (FA-4), and Teaticket Path restriction of channel off Perch Pond (FA-5).
- Acquire open space. Parcels considered a priority for acquisition for water supply development and protection: Falmouth Tracts 4, 6, 11, 12, 19, 26, 33, and 35 were ranked as having medium or high water supply development potential in the Cape Cod Commission's *Priority Land Acquisition Assessment Project* (April 1999). These tracts are located throughout the Town of Falmouth.

Recreation:

Camping areas: Cape Cod Camp Resorts

Golf courses:

- Cape Cod Country Club, Otis Golf Course

Pathways and trails:

- www.capecodcommission.org/pathways/trailguide.htm

Public access:

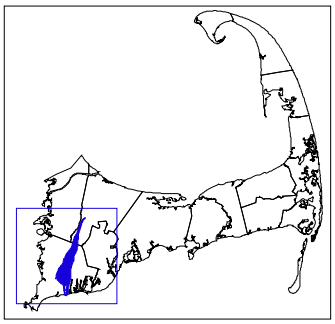
- www.state.ma.us/dfwele/pab/pabSEmap.htm

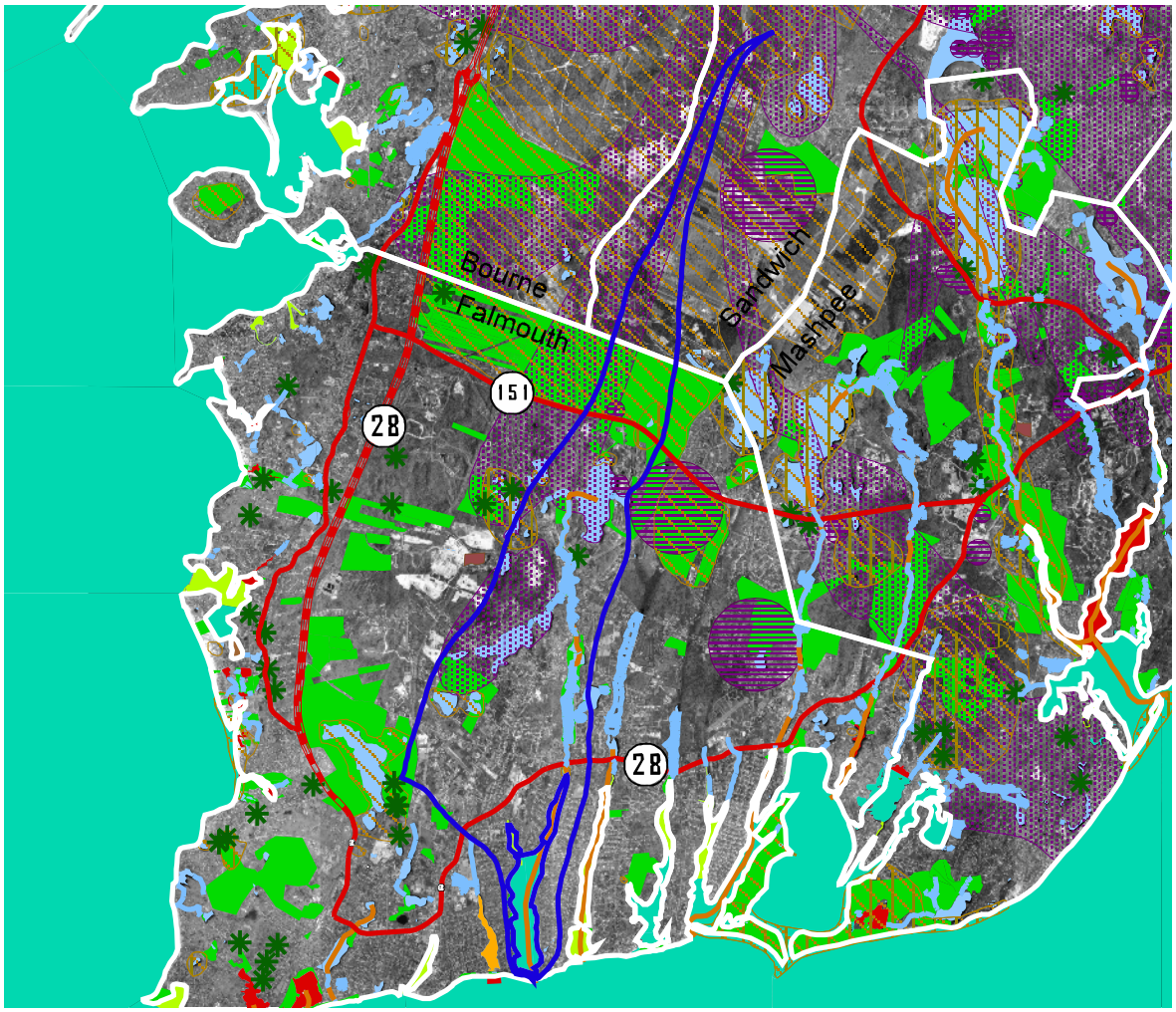
Public beaches and landings:

- Bristol Beach
- Landing on western shore of Great Pond
- Landing on Jenkins Pond

Great Pond

Falmouth and Sandwich, MA





Watershed Resources

1 0 N 1 2 Miles

Natural Heritage and Endangered Species Program Data
- Certified Vernal Pool
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Species

Groundwater Protection Areas
- Interim Wellhead Protection Area
- Zone II
- Solid Waste Facility

Watershed Boundary

Anadromous Fish Run

Shellfish Growing Areas
- APPROVED
- CONDITIONALLY APPROVED
- MANAGEMENT CLOSURE
- PROHIBITED
- RESTRICTED

Open Space

Streams

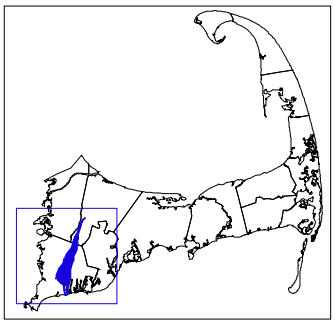
Ponds

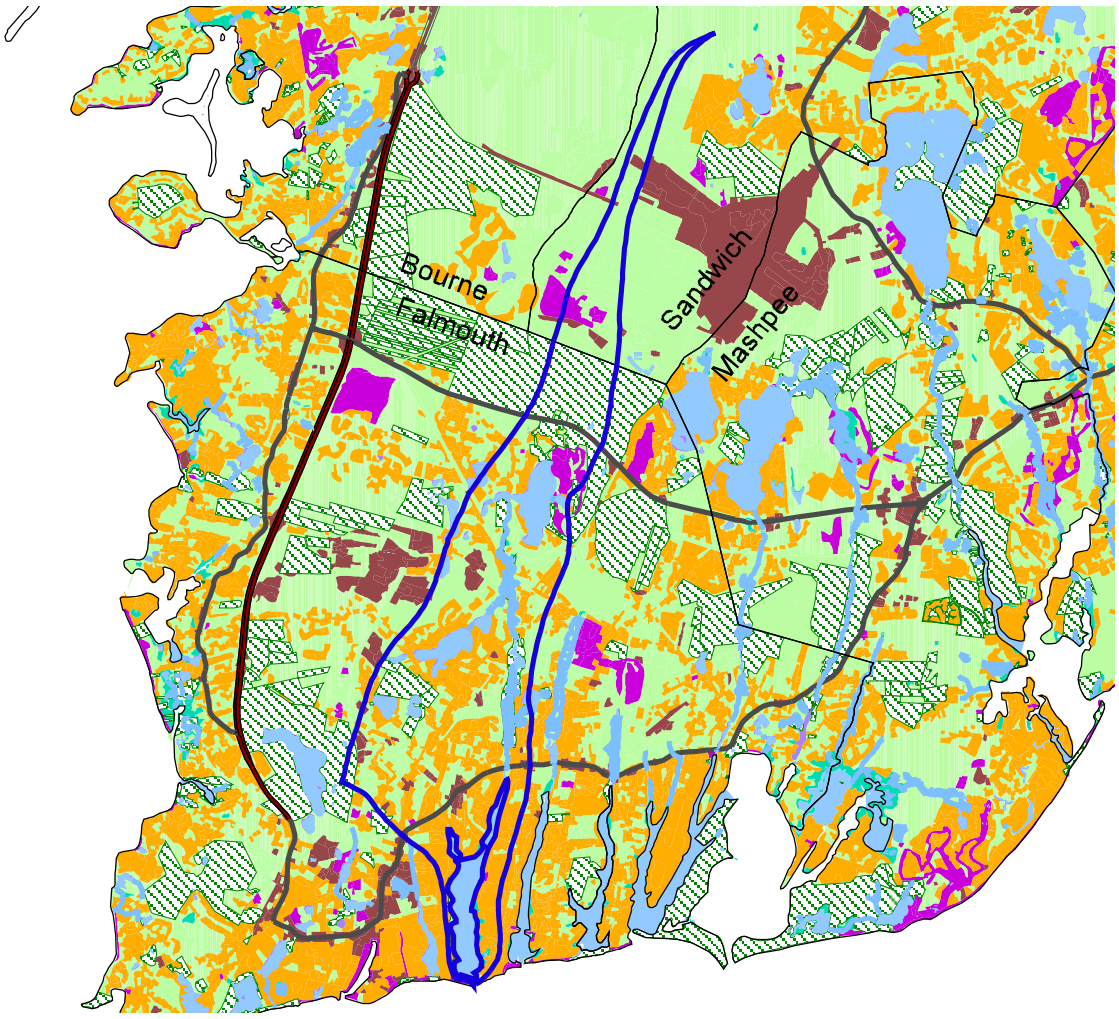
Roads

Prepared by: Courtney Armentrout, EOEA Cape Cod Watershed Team
Winter 2003

Great Pond

Falmouth and Sandwich, MA





Land Use

N

1 0 1 2 Miles

Land Use

- non-residential developed
- open land
- recreation
- residential
- water
- wetland
- Streams
- Ponds
- Watershed Boundary
- Protected Open Space

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